ABSTRACT OF THE DISCLOSURE

A method of calibrating glucose monitor data includes collecting the glucose monitor data over a period of time at predetermined intervals. It also includes obtaining at least two reference glucose values from a reference source that temporally correspond with the glucose monitor data obtained at the predetermined intervals. Also included is calculating the calibration characteristics using the reference glucose values and corresponding glucose monitor data to regress the obtained glucose monitor data. And, calibrating the obtained glucose monitor data using the calibration characteristics is included. In preferred embodiments, the reference source is a blood glucose meter, and the at least two reference glucose values are obtained from blood tests. In additional embodiments, calculation of the calibration characteristics includes linear regression and, in particular embodiments, least squares linear regression. Alternatively, calculation of the calibration characteristics includes non-linear regression. Data integrity may be verified and the data may be filtered.